Dry Docks
Our unique capability is your solution
Royal HaskoningDHV has over 65 years’ experience in shipyard planning and design. Our services cover the full spectrum of development for dry dock facilities around the world, for both shipbuilding and ship repair.

Our professionals lead the way in the design of new dry docks and the renovation or modernisation of existing dry docks by the installation of dock arms, hauling-in facilities, and piped and electrical services. We were also responsible for drafting the British Standard for shipyard design, including dry dock and dock gate design.

Our dry dock project experience covers:

<table>
<thead>
<tr>
<th>Type</th>
<th>Shipbuilding</th>
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<tbody>
<tr>
<td>Size</td>
<td>Ship repair</td>
</tr>
<tr>
<td>Width</td>
<td>from 10 m to 180 m</td>
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<tr>
<td>Depth</td>
<td>from 5 m to 20 m</td>
</tr>
<tr>
<td>Length</td>
<td>from 100 m to 450 m</td>
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<tr>
<td>Ground conditions</td>
<td>marine clay – very soft</td>
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<tr>
<td></td>
<td>sand – permeable</td>
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<tr>
<td></td>
<td>limestone – karstic features</td>
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<td>granite – very hard</td>
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Tidal range: min 0.2 m, max 10 m

Usage frequency: from 100 repair dockings per year to two shipbuilding launches per year

Location:
- Bahrain
- New Zealand
- Brazil
- Oman
- Canada
- Qatar
- Egypt
- Singapore
- Gibraltar
- South Africa
- Greece
- Spain
- India
- Sri Lanka
- Indonesia
- Thailand
- Iran
- The Philippines
- Korea
- Turkey
- Malaysia
- UAE
- Mexico
- UK
- Netherlands

Royal HaskoningDHV has in-depth knowledge and expertise in all aspects of dry dock design. We work closely with our clients to understand all their operational requirements, and deliver innovative and state-of-the-art solutions to achieve their objectives.
Dock floors
We assess and select the most suitable and cost effective type of dock floor to resist the significant hydrostatic uplift pressure on the empty dock floor as well as the loads imposed during shipbuilding or ship repair.

We design all types of dock floor including:
- Drained floor (comprising a reinforced concrete slab with a sub-floor drainage system)
- Gravity floor (comprising a very thick mass concrete slab)
- Anchored floor (comprising a reinforced concrete slab with piling or ground anchors)
- Hybrid floor (comprising gravity/drained and/or anchors)

We also deliver unique designs for dock blocks to support vessels when docked.

Multi-purpose pumphouses
We develop the most appropriate type and size of pumphouse for every application – from large, containing huge vertical mixed flow centrifugal type pumps, to intermediate, with vertical submersible mixed flow ‘propeller type’ pumps, or small, with submersible centrifugal type pumps.

The pumphouse also usually contains the drainage/stripping pumps, fire, ballast, contaminated water and sub-floor drainage pumps, and filling/flooding valve.

Dock copes/operational services
We use our experience and expertise to deliver the most efficient solutions for dock copes, always balancing cost and operational performance. Our designs ensure that the cope structure will operate at optimal levels and not become too congested with all the equipment, services and furniture required.
Gates

Royal HaskoningDHV has designed over 150 gates across the world during the last 65 years, including many of the largest and most innovative.

Our gate designs focus on low capital cost and ease of installation as well as efficient operation and maintenance. Every design takes full account of the unique parameters of the location and functionality required.

Our proven track record covers the full spectrum of gate sizes and operational features for both new and replacement gates. We use a combination of the latest finite element analysis programmes, in-house software and written calculations to ensure confidence in the gate’s structural integrity and operational characteristics.

Dry Dock Entrance Gates
- Flap Gates: box, cantilever, propped
- Caisson Gates: spanning, gravity
- Mitre Gates

Dry Dock Intermediate Gates
- Inverted ‘Y’
- Lambda
- Stop Log
Equipment and mechanical and electrical services

Our multidisciplinary teams of dry dock technical experts and mechanical and electrical specialists are world leaders in planning and developing designs for the range of equipment and mechanical and electrical systems needed for dry dock operations.

Mechanical piped services
We design the piped services distribution system needed for the efficient operation of the dry dock. This also includes the sources of the services such as pumphouses/pumps to feed the fire and ballast water systems, compressors to feed the compressed air system, and bottled gas compounds to feed the gas systems.

Hauling-in system
A well planned hauling-in system is vital for the efficient operation of a ship repair dock, where speed of docking and un-docking is crucial. All aspects of the hauling-in system are considered, including hauling-in winches, steel trolleys running on rails built into the cope structure, capstans, bollards, and the winch control system.

Winches
Our expertise covers winches for opening and closing the dock gate, ‘hauling-in’ winches to assist with the docking and un-docking of vessels and winches to assist with manoeuvring ships’ propellers during repair and maintenance.
Pumps
We have expertise in the whole life cycle of a dry dock project, from inception through to installation and construction. This includes the full range of pumps required within a dry dock or a shipyard, such as the main dock dewatering pumps, drainage/stripping pumps, fire pumps, ballast pumps, contaminated water pumps, and sub-floor drainage pumps.

Electrical services, communications and control systems
We design the electrical services distribution systems including substations, switchgear and transformers, as well as state-of-the-art communications and control systems needed for the safe and efficient operation of the dry dock.

Dock arms
We deliver performance specifications for the dock arms, or ‘travelling stages’, which provide a working platform alongside any section of a docked vessel and enable work such as blasting and painting. We also design the cope and wall structures to support, access and supply them.

Contaminated water treatment
We have the expertise to plan and design the process of capturing and treating the contaminated water generated within a dry dock.
About Royal HaskoningDHV
With its headquarters in Amersfoort, the Netherlands, Royal HaskoningDHV is an independent, international project management, engineering and consultancy service provider. Ranking globally in the top 10 of independently owned, non-listed companies and top 40 overall, the company’s 7,000 staff provide services across the world from more than 100 offices in over 35 countries.

Our connections
Innovation is a collaborative process, which is why Royal HaskoningDHV works in association with clients, project partners, universities, government agencies, NGOs and many other organisations to develop and introduce new ways of living and working to enhance society together, now and in the future.

Memberships
Royal HaskoningDHV is a member of the recognised engineering and environmental bodies in those countries where it has a permanent office base. All Royal HaskoningDHV consultants, engineers, architects, planners, environmental and other specialists are members of their individual branch organisations in their various countries.

Company QHSE Management
Royal HaskoningDHV is committed to Quality, Health, Safety and Environmental (QHSE) Management and this lies at the heart of the management of all projects.

The Company’s H&S system complies with the requirement of The Health and Safety at Work Act 1974 and is certified by Lloyds Register under Certificate Number RQA664199.

The company’s QMS complies with the requirements of BS/NEN-EN-ISO 9001:2000 and is certified by Lloyds Register Quality Assurance. The Approval Certification Number is 655229.

The QMS also includes an Environmental Management System (EMS) which complies with the requirements of BS/NEN-EN-ISO 14001:2004 and for which registration is being rolled out across the company. The Approval Certification Number is 663206 for the Netherlands and 662753 for the UK.

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